DOCUMENT RESUME

ED 271 449 SP 027 775

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TITLE A Center on Effective Secondary Schools. Final Report of Planning Grant.
INSTITUTION Wisconsin Center for Education Research, Madison.
SPONS AGENCY National Inst. of Education (ED), Washington, DC.
PUB DATE 6 Sep 85
GRANT NIE-G-85-7123
NOTE 55p.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Educational Change; Higher Education; *Program Proposals; *Research and Development Centers; Research Needs; *School Effectiveness; *Secondary Education

ABSTRACT

Work being conducted by the Wisconsin Center for Education Research on the topic of effective secondary schools is described. The first section of this paper contains a summary of planning activities. A 5-year proposal for the Center on Effective Secondary Schools is described as well as an evaluation of that proposal. The second section presents a perspective on the mission of the new center. A view is presented of the current secondary school reform movement and how the center should respond to that movement. A specific plan of research to address the important issues within the movement is outlined. The third section of the paper details the future objectives of the center, including three long-range objectives--development of knowledge, improvement of practice, and provision of national leadership--and five important themes: academic achievement; higher order thinking; at-risk students; staff working conditions; and school change. (CB)

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Final Report of Planning Grant for a Center on Effective Secondary Schools

(NIE-G-85-7123)

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September 6, 1985

SP 027 775

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1. SUMMARY OF PLANNING ACTIVITIES

On August 15, 1985, we submitted to NIE a five-year proposal for the Center on Effective Secondary Schools. This proposal was developed according to plans outlined in the Planning Project submitted to NIE in January 1985. Several activities were used to refine the planning proposal. In addition to meetings within the Center and with authorities in diverse fields, four types of input from beyond the Center had major impact on the evolution of the proposal:

1. A written review of the planning proposal by Michael Rutter, principal investigator of a major quantitative study on effective secondary schools.

2. Special reviews commissioned for the planning process on Assessing Student Engagement (Ralph Mosher and Brad MacGowan), Conceptions of Higher Order Thinking (Robert Sternberg), Implications of the California School Improvement Study for Secondary School Reform (David Marsh), and A Synthesis of Research on Staff Development for Effective Secondary Schools (Robert Stevenson).

3. A two-day discussion of the planning proposal with an experienced outside evaluation team.

4. A two-day intensive meeting with a principal and a teacher from each of five high schools (two urban, one rural, one private, one suburban) to react to plans for the Center and to discuss the formation of a continuing advisory network of high schools.

The reviews are appended to this report. In the following pages we summarize the meetings with the evaluation team and the high school practitioners. At the end of this summary is a list of participants in the planning process and of organizations with which we consulted.

Evaluation Team

We invited an outside assessment and evaluation team to critique our planning proposal in February, 1985. The team consisted of (a) Terry Clark, who holds a doctorate in educational administration, worked from 1982 to 1984 as Assistant Director for Research and Evaluation of the New York City Schools, and is currently completing a book on the urban high schools recognized by the Ford Foundation; (b) David Cohen, Professor of Education at Harvard and Michigan State, a historian and authority on public policy and education who has published extensively on equal opportunity, educational change, and evaluation and most recently participated in observational research on 15 high schools; and (c) Jackson Parker, Director of Research and Evaluation for the Racine, Wisconsin, public schools, who has a doctorate in urban education, leadership experience in curriculum and staff development, and experience as a high school and junior high principal. The group was chosen to reflect the perspectives of practitioners, policymakers, and researchers. We particularly sought the views of people who are

experienced in urban education and the problems of disadvantaged students.

The team met in Madison on February 4 and 5 with members of the secondary center planning group to review the Center's initial plans. We asked the team to respond to the following questions:

1. Do our preliminary topics represent the most significant issues? That is, would increased knowledge on such issues help to enhance the ability of secondary schools to engage students in active learning and higher order thinking? If the set of issues had to be reduced, which should receive highest priority?

2. Are the issues researchable? What is the probability that a five-year effort could produce generalizable knowledge on these topics? Which issues seem to be the most and least researchable?

3. What individuals, specific schools, and organizations seem to have knowledge on how to "solve" some of the major issues to which we have referred?

4. What are the most powerful channels (i.e., journals, newsletters, professional meetings, electronic networks) for disseminating knowledge from a Center of this sort to different constituencies (e.g., teachers, principals, policymakers)? Should a new network be developed?

Discussion centered on the strengths and weaknesses of the planning proposal, needed changes in plans and strategies, and suggestions for possible collaborations and data sources. Following the meeting, each evaluation team member submitted a short written report; these reports were used to help focus the work described in the planning proposal. Below is an example of the comments which guided preparation of the final proposal.

> ...the research program envisioned for this center should... deepen our understanding of secondary education in the U.S., but should deepen it with reference to school effectiveness--an applied matter. It should also illuminate it in a way that will help schools to become more effective.
>
> ...the research should be keyed to alternative notions of effectiveness. Your idea of engagement is creative, but by itself insufficient. ...engagement alone, considering the varied aims of secondary schools, seems intellectually limited, and unlikely to be of great value to practitioners.
>
> Two simple sorts of queries ought to run through the research program. ...What do we know already, from academic studies of secondary education and its connections with the economy and society, about effectiveness in secondary education [and] What can we learn about the implementation and impact of current efforts to improve effectiveness, and how do these results illuminate the results of inquiries of the first sort? These

two species of questions can be elaborated in many different ways, but they should run through nearly everything such a center would propose to do, disciplining the inquiries and relating them to each other.

...while your contacts with practice could be built in various ways, these comments suggest a very particular construction: use research to learn from practice, about ways to improve effectiveness. This means continued listening to practitioners and scrutinizing their improvement efforts. It also implies using practitioners' knowledge to help your staff to become intelligent commentators on practice.

* * *

Focus on "disadvantaged" and "marginal" is absolutely important--perhaps the most important aspect, when impact for social policy is considered. However, "engagement," "thinking," and "quality of life" need to be perceived in some framework that treats of learning style and cultural differences.

The focus on curriculum depth, integration of knowledge, focus and coherence, though vague, is important. The proposal mentions "models for facilitating depth," which implies a study of pedagogy. But the proposal skirts around pedagogy for fear of treading on the ground of another center.... It is not clear here whether "depth, coherence, and integration of knowledge" are metaphors for curriculum or instructional matters. The panel elaborated on the question of introducing another problematic term. Whatever is meant by the metaphor "depth" will be partly--but not completely in my view--covered by a strong concept of higher order thinking.

* * *

I have found that a key ingredient of successful dissemination is networking. This involves the verbal and, if possible, in-person transmittal of information, translating research findings into practice, and strategies for school people to apply research. Practitioners rely heavily on word-of-mouth and in-service to obtain information. These mechanisms work most successfully through staff development sessions, small-group seminars with key people, and "on-call" information services. In addition, concise and prescriptive summaries of the state-of-the-art on a selected topic (e.g., time on task or dropout prevention programs), with bulleted findings, steps to be taken, and resources for more in-depth information, are attractive to practitioners and policymakers seeking alternatives.

Meeting with Practitioners

The research plan for the secondary school center was revised based on the reactions of the assessment and evaluation team, study areas were further defined, and research projects were sketched. These new plans were presented May 9 and 10 to a group of eleven practitioners (five teachers, five principals, and one superintendent) from five midwestern high schools (two urban, one rural, one private, one suburban).

The objective of the two-day meeting was to get feedback from practitioners on the proposed research and on the idea of forming a continuing network of high schools to advise the Center. We asked the participants the following questions regarding proposed research:

1. Does the research address issues that you see as important in improving high school effectiveness in the United States? In your own school?

2. Have significant questions been omitted that a national Center should address?

3. Is the proposed research likely to lead to useful recommendations for making high schools more effective? If not, how should it be modified?

Concerning the potential network we asked:

1. What would you or your staff gain from the kinds of informal dialogue and inquiry proposed?

2. What conditions would be necessary to maximize cooperation of your staff and students, e.g., parental consent, release time, our offering of technical assistance (are there particular research issues within your school where we might be of assistance?), trips to the UW campus?

3. What types of network activity among the schools would be appropriate, e.g., newsletter, visitations, conferences?

4. What additional commitments should the Center make in order to make the network useful to and to stimulate participation by the schools?

The group reacted positively to the proposed research agenda and provided a great deal of information on both the problems and the successes of their schools in dealing with issues of academic achievement, school change, at-risk students, higher order thinking, and staff working conditions. They cautioned that recommendations for change based on highly critical appraisals of high schools would likely not be well-received; practitioners would like to see the new center present a more balanced view by highlighting the things schools are doing well. Many exemplary programs and practices were identified by the group.

The teachers and principals had several suggestions regarding dissemination. They strongly endorsed the idea of using publications such as NEA and AFT bulletins that reach classroom teachers, and recommended face-to-face exchange of information to the extent possible.

The group also supported the formation of a permanent network of schools, although they advised a broader mix of schools for wider impact. Each school participating in the meeting would eagerly join a secondary school network sponsored by the center.

Our final proposal reflects the practitioners' views of how such a network should be structured. We propose to organize a High School Advisory Network consisting of a principal and teacher from six to eight diverse high schools. The network would include schools from Milwaukee and Chicago with large minority and disadvantaged enrollment, schools from smaller cities like Madison, at least one private school, and a small rural school. Network school representatives would meet in Madison with Center staff at least once per year, but researchers would also visit network schools periodically throughout each school year. The purpose is two-fold: to improve the responsiveness of research to practitioner concerns and to offer practitioners fresh opportunities to reflect on their work through informal contact with researchers. The schools would provide researcher access, both in Madison and at the school site, to experiences and thoughts of teachers, administrators, and students. The Center would offer practitioners access to relevant past research, to emerging findings from new research, and to sources of technical assistance.

In addition, each R&D project we proposed has plans and funds budgeted to seek practitioner advice on its research through group conferences or individual consultation. In the first year, for example, the project on Higher Order Thinking in the Humanities would conduct a conference with teachers to discuss barriers and opportunities in high school history, and the project on Staff Working Conditions would hold a meeting to discuss teacher engagement with teachers and administrators.

Consultation with National Organizations

Throughout the planning period we talked with representatives of many scholarly and practitioner associations as well as faculty from other universities with whom we might establish cooperative relationships. A list of those who have indicated support of our proposed activities is presented at the end of this summary; we plan to consult annually, at a minimum, with each of these groups. Chief among them are the unique networks of schools working on high school improvement such as the Coalition of Essential Schools, the Ford Foundation Urban Schools Network, The Harvard Principals' Center Network, the Futures Planning Network of the Association for Supervision and Curriculum Development, and the North Dakota Study Group.

Secondary School Planning Group, University of Wisconsin-Madison

Bradford Brown, Assistant Professor, Educational Psychology
William Clune, Professor, Law School
Diane Eich, Program Coordinator, Wisconsin Center for Education Research
Adam Gamoran, Assistant Professor, Sociology
Cora Marrett, Professor, Sociology and Afro-American Studies
Mary Metz, Associate Professor, Educational Policy Studies
Fred Newmann, Professor, Curriculum and Instruction
Martin Nystrand, Associate Professor, English
Janice Patterson, Director of Computer Operations, Wisconsin Center for Education Research
William Reynolds, Professor, Educational Psychology
Thomas Romberg, Professor, Curriculum and Instruction
Richard Rossmiller, Professor, Educational Administration
Robert Rutter, Project Associate, Wisconsin Center for Education Research
Francis Schrag, Professor, Educational Policy Studies and Philosophy
Marshall Smith, Professor, Educational Policy Studies and Educational Psychology
Laurence Steinberg, Professor, Child and Family Studies
Gary Wehlage, Professor, Curriculum and Instruction

Outside Consultants During Project Period

Eleanor Farrar, Senior Policy Analyst, Abt Associates
Daniel Keating, Professor of Psychology and Education, University of Maryland-Baltimore County
David Marsh, Associate Professor, Curriculum and Instruction, University of Southern California
Donald Moore, Executive Director, Designs for Change
Stewart Purkey, Assistant Professor, Lawrence University
Richard Wallace, Superintendent, Pittsburgh Public Schools

Assessment and Evaluation Team

Terry Clark, Consultant to the Academy for Educational Development, visiting scholar, Stanford University
David Cohen, Professor of Education, Harvard University and Michigan State University
Jackson Parker, Director of Research and Evaluation, Racine (Wisconsin) Public Schools

High School Practitioner Advisors

Bruce Bamberg, mathematics teacher, Madison High School, Milwaukee
Robert Jasna, Principal, Madison High School, Milwaukee
Dennis McKinley, music teacher, Edgewood High School, Madison
Greg Mueller, social studies teacher, Memorial High School, Madison
Louis Mullin, Principal, Markesan High School, Markesan, Wisconsin

Maryann Nardi, counselor, Wells High School, Chicago
Debbie Parman, special education teacher, Markesan High School, Markesan
David Peterson, Principal, Wells High School, Chicago
Sister Kathleen Phelan, Principal, Edgewood High School, Madison
Lyle Plagenz, Superintendent, Markesan Public Schools, Markesan
Carolyn Taylor, Principal, Memorial High School, Madison

Cooperating Organizations

Wisconsin Department of Public Instruction, Herbert J. Grover
Academy for Educational Development, Sharon Franz
Harvard Principals' Center, Roland S. Barth
North Dakota Study Group, Vito Perrone
Coalition of Essential Schools, Theodore R. Sizer
American Federation of Teachers, Albert Shanker
Association for Supervision and Curriculum Development, Gordon Cawelti
National Association of Secondary School Principals, Scott D. Thomson
National Council of Teachers of Mathematics, James D. Gates
National Council for the Social Studies, Frances Haley
National Council of Teachers of English, Charles Suhor

II. TECHNICAL REPORT ON R & D MISSION

This report presents a perspective on the mission of the new Center on Effective Secondary Schools which was developed under a planning grant from NIE to the Wisconsin Center for Education Research. The first two sections describe our view of the current secondary school reform movement and how the mission of the center should respond to that movement. The third section outlines a specific plan of research to address the issues we perceive to be most important.

A Perspective on the Contemporary Reform Movement

In recent years more than 30 national projects have cast special attention on U.S. secondary schools (Passow, 1984). The projects include recommendations for reform of the high school (e.g., Boyer, 1983; College Board, 1983; National Commission on Excellence, 1983; National Science Board Commission, 1983; Sizer, 1984), case studies of individual schools (Cusick, 1983; Lightfoot, 1983; Lipsitz, 1984), national surveys of conditions in high schools (Fetters, Brown, & Owings, 1984; Raywid, 1982), official recognition of outstanding middle level and high schools by the U.S. Department of Education, the Ford Foundation and the Carnegie Foundation for the Advancement of Teaching, and other research reports examining secondary schools (e.g., Coleman, Hoffer, & Kilgore, 1982; Powell, Farrar, & Cohen, in press). State and local school districts have also undertaken a variety of school improvement initiatives (Miles & Kaufman, 1985; Purkey, Rutter, & Newmann, in press; U.S. Department of Education, 1984).

This indicates considerable national interest in high school improvement, but the substantial amount of descriptive information that exists has not been organized into a body of knowledge or a comprehensive theory useful to reformers and practitioners. Furthermore, studies of previous reform efforts in the U.S. (e.g., Cuban, 1982; Krug, 1972; Popkewitz, Tabachnik, & Wehlage, 1982; Ravitch, 1983; Tyack, 1974) point to persistent cultural and systemic obstacles that must be considered in evaluating the results of educational "reform" movements.

A national Center on Effective Secondary Schools should be informed by a perspective on the contemporary interest in education reform. Such a perspective should show an awareness of the difficulties in developing a cumulative, coherent knowledge base on effective secondary schools and should offer an explanation of why it has been so difficult to alter persistent patterns of organization and instruction in high schools. We propose a program of research, development, and dissemination that is guided by a perspective containing five main points: diversity among schools, lack of consensus on educational goals, diversity in the student population, weak linkages among levels of the educational system, and a lack of systematic sustained study of secondary schools.

1. Secondary schools are so diverse that meaningful forms of school improvement, or criteria for effectiveness, for one will be very different from those for another. A principal of one urban high school

described the dangers that students and staff confront daily: continuing threats of shakedowns in and out of school, disruptive family life, poverty, and long histories of academic failure. With most freshman unable to read above the fifth-grade level, that school would be "effective," he said, if 30% of entering students graduated. In contrast, the principal of an affluent high school, adjacent to the city and sending 80% of its students to college, described his central problems as lending more legitimacy to vocational and practical studies and supporting some lively dissent and controversy among faculty and students. Recent studies have illustrated diversity between schools (e.g., Boyer, 1983; Lightfoot, 1983; Metz, in press), and astute observers of school improvement efforts (e.g., Goodlad, 1984; Sizer, 1984) have strongly recommended the need for each school to chart its own course, responsive to its unique circumstances. Diversity between schools complicates not only reform efforts, but the task of producing generalizable research findings.

2. The goals for secondary education in this modern, changing, and pluralistic society have been (and probably will continue to be) consistently disputed. Most educational proposals can be justified with reference to three underlying goals that, as abstractions, attract much agreement: preparation for citizenship, preparation for work, and personal development. These general ideas, however, are insufficient for forging consensus on many specific educational policies and practices. Serious disagreements exist over the relative priority to be given among the three, and over conflicting meanings within a given goal (e.g., high schools continually struggle over the conflict between academic coursework for college and vocational education--different forms of preparation for work). Several high schools in the ASCD network on general education held frequent and intensive faculty meetings for two years trying to reach agreement on graduation requirements (Roberts & Cawelti, 1984). In one of the schools we visited, the tension between teachers of academic and nonacademic subjects continued.

Disagreement on goals occurs in elementary education as well, but it is less acute there because of the obvious need for every child to master fundamental language and numerical skills and to learn to get along with others in institutions beyond the family. In contrast, the stage of secondary education presents strong demands for students to prepare more directly for specialization and selection into diverse forms of work, citizenship, and personal life style that characterize adult life.

Recent commentary emphasizes the need for goal consensus within schools and suggests that certain fundamental goals can be agreed upon for all students (e.g., an orderly learning environment, universal instruction in a core curriculum, and the promotion of certain character traits such as honesty, kindness, responsibility). Social research has demonstrated, however, that slogans that attract wide consensus can be used by leaders and organizations to give an illusion of social cohesion which disguises fundamental disagreements about the specific application of the slogans (Apple, 1979; Edelman, 1971; Komisar & McClellan, 1961). Current policy proposals to facilitate greater parent choice in

selecting children's schools illustrate one way of handling these disputes. The proposals may be seen as a way of improving schools by making them more competitive with one another, but they should also be seen as a way of avoiding substantial social disagreement about the purposes of schooling while at the same time creating more goal consensus within separate schools.

3. National and state policies to achieve equal educational opportunity have led to compulsory education to age sixteen and to the emergence of comprehensive and consolidated high schools. These, along with increased proportions of minority and economically disadvantaged students, have resulted in high schools with highly diverse student bodies.

Student diversity presents complexities for teachers at any level of schooling, but these take on particular salience in comprehensive high schools for at least two reasons. High schools must respond to substantial differences in students' prior preparation, accumulated over eight years in elementary schools which themselves differ in quality. And, as mentioned above, the prospect of career and formal education beyond high school generates a press on high schools to offer more diverse specialized curricula for different groups of students.

Teachers and administrators express a common frustration: they believe that students should not all be taught the same curriculum or subjected to the same teaching style, but workloads and organizational constraints often prevent them from responding appropriately to student differences. High schools do respond differentially to students through tracking, ability grouping, elective courses, and special programs, but these approaches have been criticized as inadequate and often as limiting, rather than advancing, educational opportunity for all students. The commitment to offer equal educational opportunity to students from diverse backgrounds with diverse aspirations, in a way that allows all to strive seriously for "excellence," presents persisting dilemmas in the allocation of educational resources among different groups. Perceptive analyses of the dilemma of equity and excellence (e.g., Astin, 1983; Green, 1983) have not resolved this issue. A high school principal explained that, in spite of the state's effort to equalize educational opportunity through a graduation requirement of three years of math, lower track students could meet the requirement but never master material beyond ninth-grade algebra.

4. The U.S. educational system offers a multiplicity of points through which school reform may be attempted but has few mechanisms to maximize cumulative or systemwide impact. The absence of a tightly controlled centralized system allows classroom teachers, schools, school districts, states, publishers of materials, and teacher training institutions considerable autonomy in their approaches. Of course, there is remarkable similarity in the organization of schools, the nature of teaching, and the content of texts and tests. But such uniformity is less the product of deliberate rational efforts to reform schools and more the result of complex market and political processes. The problem is that any particular reform effort (e.g., improving curriculum content, enhancing teaching skills, or increasing school

participation of low-income parents) might be initiated at several different levels, that within any level there is much autonomy among units, and that few strong linkages between levels exist. The linkage problem was illustrated by a principal who explained that high school teachers in his district routinely keep two sets of lesson plans: the "show" lesson to display to visiting supervisiors from central office, and the more practical "go" lesson which the teacher actually uses.

5. There has not been substantial support for long-term research focused on secondary school effectiveness. Although several studies have recently emerged, they embody diverse approaches not easily synthesized into systematic knowledge, and even the most extensive national data bases have serious weaknesses (to be discussed later). The universities which host much of the research encourage individual specialization rather than large-scale research and long-term collaboration. Finally, the educational research community in recent times seems almost polarized between two approaches to the generation of knowledge: large-scale survey methods using quantitative analysis versus in-depth case studies using qualitative analysis.

Current enthusiasm for research and reform in secondary schools is to be welcomed, but these points lend a note of realism to the magnitude of the task, and they help to explain the absence of dramatic, systemwide reform. Disagreement on fundamental goals stands in the way of united action to achieve "effective" secondary schools. Great diversity among students attracts reform efforts toward particular groups rather than toward the school as a whole or students in general. Loose linkages among the multiple levels at which action might be taken often weaken the impact of any particular initiative.

An awareness of longstanding disagreements about fundamental goals of education should inspire respect for the complicated process of building meaningful consensus and invite us to search beyond slogans for indicators of effective secondary schools. Being sensitive to the diversity of students that high schools serve alerts us to the likelihood that any given reform effort may benefit one group, but have no effect or even negative effects on another. Knowledge of the multiple levels at which reform might be introduced and the weak linkages between them should generate continuing questions about the impact that innovation at one level has on units within that level or at other levels.

The perspective also helps to explain the relatively fragmented nature of research on secondary schools. Researchers have focused their attention on particular educational goals, on particular groups of students, or on particular points of entry into the system, with little inclination to inquire more broadly into schoolwide or systemwide phenomena. Such research has been more manageable, given the lack of financial support for long-term collaborative work. The challenge of bridging an apparent paradigm gap between qualitative and quantitative methods may also demand new patterns of funding and organizational support.

The structure we propose for the Center offers a new opportunity to attack these problems. While much original work must be done, this is an opportune time to build upon the existing knowledge base in which emerging developments show great potential. Through the study of school reform over the past 25 years, we have accumulated sufficient knowledge to articulate the perspective presented above, a tremendous advance over the knowledge on school change in 1960. Beyond the research contributing to that perspective, we should recognize recent developments in six areas which the Center can build upon and to which it should contribute.

New perspectives on adolescent students. In the last several years, significant knowledge has been gained on issues faced by young adolescents (Lipsitz, 1977), on the nature of adolescent work (Greenberger, Steinberg, & Ruggiero, 1982; Steinberg, 1982), on the nature of student negotiation and resistance in school (McNeil, 1983; Page, 1984; Willis, 1977), and on the massive problems faced by at-risk students, especially minorities in big cities (Alexander, Natriello, & Pallas, 1985; Designs for Change, 1985; National Coalition of Advocates for Students, 1985; National Commission on Secondary Education for Hispanics, 1984).

Analyses of organizational productivity. Much has been learned about the organizational dynamics of schools (Baldridge & Deal, 1983; Peterson, 1984; Sergiovanni & Corbally, 1984). Bringing more general analyses of organizational productivity in the private and public sector (e.g., Hackman & Oldham, 1980; Peters & Waterman, 1982) to bear on issues of schooling could break important new ground.

Study of cognitive processes. The emerging field of cognitive science may teach us new ways of conceiving teaching and learning. Some analyses of intelligence and higher order thinking have already suggested potentially powerful educational applications (e.g., see Fredericksen, 1984; Glaser, 1984; Resnick, 1983).

Research on effective schools. In spite of important critiques of effective schools research (Purkey & Smith, 1983), much of it (e.g., Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979; Coleman et al., 1982; Edmonds & Fredericksen, 1979; Rutter, Maughan, Mortimore, & Ouston, 1979) has advanced the effort to understand differences between schools, controlling for the influence of students' background and competence at entry, and has generated important hypotheses and methodologies for explaining differences among schools.

Ethnographic study of schools. A variety of case studies and ethnographies have advanced our understanding of schools as complex meaning systems or cultures (Cusick, 1973, 1983; Lightfoot, 1983; Metz, 1978, in press). This helps us to see more clearly both differences and similarities between schools and to understand in a more complete way what matters to the participants.

Development of large scale data bases. Data bases provided by the National Longitudinal Study, High School and Beyond (HSB), the College Board, the National Assessment of Educational Progress (NAEP), and the

International Assessment of Educational Achievement (IEA) offer new opportunities to understand the relationship of aspects of high school to national trends in the education and employment histories of youth.

Each of these promising developments can be further illuminated through literature on education in other nations. Just as knowledge on effective corporate management has been advanced by the study of firms in Japan and elsewhere, knowledge on effective schooling can benefit from cross-cultural comparison. Some of the most useful research on secondary education, for example, comes from England, as in the research of Hargreaves (1982), Rutter et al. (1979), and Willis (1977). An international perspective, along with the recently developed knowledge sources, will help us approach complexities of the movement to reform secondary schools.

Mission

The mission of the Center, as we define it, is to learn how secondary schools can improve the academic achievement of all students, but special attention should be given to needs of disadvantaged and less successful students. Research on the problem of improving academic achievement is guided by three assumptions: (a) that the conception and measurement of appropriate forms of achievement are themselves problematic and the mission should not be construed simply as increasing student scores on tests currently in use; (b) that the mission should be approached not simply by looking for relationships between generalized school inputs and student achievement, but, more importantly, by trying to understand how to increase student engagement in academic work; and (c) that, although conditions and policies beyond the school have major effects on student achievement, more attention must be given to levers at the school site, that is, the strategies that teachers and administrators can use to alter specific conditions within schools to improve students' engagement and achievement. We shall elaborate on each of these points.

Academic Achievement

Studies showing long-term declines in U.S. high school students' test scores (College Entrance Examination Board, 1977; Waters, 1981), uneven performance in relation to students from other countries (Walberg, 1983; Wolf, 1977), and disparities in achievement between U.S. public and private schools (Coleman et al., 1982) have stimulated a host of state and local policies to improve academic achievement in high schools. Academic achievement is unquestionably a central goal for secondary schools, but the goal cannot be effectively pursued if it is defined simply as increasing students' scores on currently used tests.

Typically, existing standardized achievement tests fail to distinguish among at least three potentially different domains of academic achievement: (a) basic skills in reading, writing, and mathematics required for minimum levels of literacy; (b) specialized forms of knowledge necessary for success in college and specific

vocations; and (c) general problem-solving or higher order thinking abilities. Counselors and teachers have told us repeatedly that they rarely discuss the results of standardized achievement tests with students, because these tests usually fail to assess student progress on the specific curriculum that the individual high school has tried to teach. In spite of a general national concern with low levels of achievement, testing programs such as the National Assessment of Educational Progress, the Scholastic Aptitude Tests (SAT), or High School and Beyond have given us little information about student and school performance in these different domains. If future research on high school effectiveness is to be helpful, it must differentiate among alternative forms of academic achievement on which effectiveness might be judged.

We recognize, of course that schools make considerable investment in goals beyond academic achievement, especially those related to personal development or responsible citizenship. Individual achievement in nonacademic areas such as music, art, athletics, debate, and applied technical skills, along with collective achievement through cooperative group activity, are important educational outcomes. These areas enrich our experience, expand our conception of the human condition, and also enhance student engagement in school, thus contributing to academic achievement. Given the need to limit the Center's work, however, we would focus primarily on how high schools affect academic achievement. The nonacademic activities of high schools should be studied, but primarily as a way of understanding the success with which schools engage students in academic work.

Student Engagement

Settling upon the precise forms of achievement by which to judge school effectiveness is a problem, but most would agree that, at a minimum, a school is unlikely to be successful unless students are actively engaged in learning. In fact, teachers and administrators often refer to student engagement as the most central problem: What can schools do to motivate students to take their schoolwork more seriously, to devote more committed effort to it?

Many high school students are often bored and uninterested in schoolwork; they devote relatively little effort to school; and they do not take seriously or value what they are taught. For some, the scars of previous failure prevent engagement and lead to dropping out; others may graduate having made little effort and with mediocre accomplishments. Even high achievers who succeed with honors can approach the work mechanistically to improve their chances for distant economic rewards, but remain psychologically disengaged in their studies. The profound disengagement of many adolescents in high schools has been widely documented (Boyer, 1983; Cusick, 1983; Everhart, 1983; Goodlad, 1984; McNeil, 1983, 1984; Powell, Farrar & Cohen, in press; Sizer, 1984; Stake & Easley, 1978).

Students' lack of engagement in secondary schools can be seen as an illustration of alienation in the society at large (Newmann, 1981). In

all but the smallest schools, large classes, bureaucratic relations, and extensive division of labor can make it difficult for staff to respond to students with special needs, and difficult for staff and students to experience a sense of community. The grading and credentialing system place primary emphasis on learning not as an intrinsically rewarding activity, but as an extrinsic hurdle to be cleared for success beyond school. If students are required for the most part to memorize isolated bits of information covering many topics, with few opportunities to pursue problems in depth and to synthesize knowledge, learning itself loses meaning. In such ways, the organization of the school, specific teaching practices, and the curriculum can all contribute to the lowered engagement of staff and students.

Our concern for student engagement dictates an orientation to school improvement that will examine more than such characteristics as attendance, discipline, lesson plans, or teaching technique. Improvement strategies must also confront the social/psychological quality of school life. Building upon a commissioned review of research on the conception and assessment of student engagement in school (Mosher & MacGowan, 1985), we believe the Center should study, in a variety of ways, the factors that affect students' engagement in academic studies.

Complexity in School-Site Management

Several types of literature suggest that specific problems of schooling (e.g., vandalism or declining test scores) should be understood from a comprehensive, institutional perspective, rather than only through the study of isolated variables. Research on corporate organizations indicates that the structure of authority, division of labor, and the emphasis on rules and procedures, if matched to the task, enhance organizational productivity (Galbraith, 1977; Hage & Aiken, 1969). Research on implementation of educational innovation indicates that reforms will fail unless they are responsive to complexities in the host schools (Berman & McLaughlin, 1978; Hertzberg, 1981; Klausmeier, in press; Miles, 1981; Popkewitz et al., 1982). Ethnographies portray the power of complex secondary school culture in shaping meaning for all participants (Cusick, 1973; Lightfoot, 1983; Lipsitz, 1984; Metz, 1978; Willis, 1977). Attempts to develop causal explanations of school effectiveness rely increasingly upon complex models (Coleman et al., 1982; Hotchkiss, 1984; Purkey & Smith, 1983; Rutter et al., 1979). And some of the recent proposals for educational reform (e.g., Goodlad, 1984; Sizer, 1984), rather than advocating discrete policies such as increased graduation requirements, more testing, and higher teacher salaries, give more attention to a complex interplay of diverse factors affecting students' education.

The value of examining the broad institutional context of school is particularly important at the secondary level. Compared to elementary schools, secondary schools are larger in size, their staff and working assignments are far more specialized, and the nature of adolescence creates special problems for schools' custodial responsibilities and educational programming. These and other differences from elementary

schooling (see Corcoran, 1985; Farrar, Neufeld, & Miles, 1983; Firestone & Herriott, 1982) present special challenges to secondary schools.

The Center should, therefore, focus on the interaction of multiple factors within secondary schools, with special attention to actions that can be taken by teachers, administrators, parents, and students to enhance student engagement. It should be noted that recently publicized reports come not from individual schools, but from outside agencies and individuals charting a course for reform of schools in general. A good deal of experience, however, along with some published evidence (Berman & Gjelten, 1983; Far West Laboratory, 1984; Ford Foundation, 1984; Klausmeier, in press; Klausmeier, Serlin, & Zindler, 1983; Lightfoot, 1983; Lipsitz, 1984) indicates that many secondary schools have taken the initiative to improve their schools by creative management at the school site.

To be sure, secondary schools are affected substantially by external forces: teacher contracts, teacher certification requirements, state mandates on graduation requirements and testing, college admission requirements, and the socioeconomic characteristics of the student body. Nevertheless the school has latitude to manage such items as curriculum content; instructional activities of teachers and students; scheduling and allocation of time and duties among staff; grouping and classification of students for instruction; mechanisms of communication between students, parents, and staff; the governance structure within the school; methods of evaluating student progress; the school's staff development programs; use of the physical plant; and allocation of funds for instructional programs. It is the Center's mission to identify more clearly the extent to which particular conditions in secondary schools may be managed by local schools to improve achievement.

Investigation of levers at the school site to promote academic achievement should be guided by an awareness that the link between desirable school practices and academic achievement may not always be direct and that school effectiveness need not be defined exclusively in terms of achievement outcomes. Studies by Lipsitz (1984) and Lightfoot (1983), for example, discuss successful middle schools and good high schools by referring to qualities of life within the organization rather than to students' accomplishments. From this point of view, one might define effectiveness in terms of such qualities as open communication among staff, encouragement of innovation, caring, nurturing and trust among staff and students, equity in allocation of resources, the degree of order and security, and responsiveness to diversity. Other investigators (Cusick, 1983; Grant, 1981; Metz, in press; Rutter et al., 1979; Sergiovanni, 1984; Wynne, 1980) offer further insights into the nature of school culture, ethos, or character that imply criteria for successful schools (and other organizations). These organizational qualities are usually assumed to lead to higher achievement for students, but it is often difficult to demonstrate a causal relationship between organizational qualities and the production of student outcomes. Such qualities may, nevertheless, be defended as necessary for fairness, decency, and organizational health as well as for their likely contribution to productivity. It is, therefore, important to understand

how levers at the school site can be deliberately managed to affect the general culture or climate of secondary schools.

Studying the management of school-site levers is a way of studying leadership, but in two ways it offers a perspective different from much previous research on leadership of the school principal. Rather than searching for general personal qualities of the principal, methods of assessing those qualities or of developing them, we recommend focus on particular actions that leaders--not only principals--take to influence the organization. The Center should seek to describe concrete actions that can be taken to increase general goal consensus toward academic achievement and student engagement, more specifically actions to stimulate staff engagement and allocation of resources for the benefit of at-risk students and toward a greater concentration on higher order thinking in the curriculum. Further, researchers should look to multiple sources of leadership within secondary schools, especially key teachers who in many ways control the quality of school life and with whom an effective principal works in concert. To understand how schools become effective is, in large measure, to learn how these people can creatively manage resources within the school.

Five-Year Program Plan

This section presents a summary of a five-year program of research developed by the Wisconsin Center for Education Research. The plan reflects the specific perceptions, interests, and expertise of the group of researchers at the University of Wisconsin, and their advisors, who were involved in its preparation. However, we believe it is a promising approach to the study of several pervasive issues in secondary school education, and that it can be of general use to practitioners and other researchers. The plan is therefore presented essentially as it appears in our August 15 proposal to NIE.

The proposed program to carry out the mission described in the preceding section is guided by three overall objectives: to develop knowledge, to improve practice, and to provide national leadership. We will accomplish these through the work of program areas dealing with issues in the definition and promotion of academic achievement, higher order thinking in curriculum, programs for at-risk students, working conditions of high school staff, and the problem of managing change at the school site, and through a set of institutional support activities.

Overall Objectives

1. Development of Knowledge

The basic purpose of the Center is to advance knowledge of factors and processes that shape secondary education. Recent studies offer a foundation on which to build, but large gaps in knowledge remain, because each of the major studies of secondary schools to date (e.g., Boyer, 1983; Coleman et al., 1982; Cusick, 1973, 1983; Goodlad, 1984; Lightfoot, 1983; Lipsitz, 1984; Metz, 1978, in press; Powell et al., in press; Rutter et al., 1979; Sizer, 1984) suffers from one or more of the

following problems: lack of a design that shows the effect of specific aspects of schooling on student outcomes over time; lack of information which captures the complexity of local school settings, especially the experience of different groups of students within school; lack of attention to manageable factors at the school site that can improve education. The Center will not be able to rectify all these deficiencies, but, building on promising aspects of the knowledge base described earlier, it will devote most of its resources to research on the problem posed in the mission statement. The research will be guided by more specific program objectives of five program areas described later.

2. Improvement of Practice

The ultimate goal of knowledge development in a center of this sort is the improvement of practice in secondary schools. Unfortunately, much previous research carries few implications for secondary school improvement. For example, some research finds that effective schools have strong leadership by the principal and high expectations by teachers for students' success (Cohen, 1983) but does not explain how schools that struggle with weak leadership and low expectations can alter these conditions. Other research shows unequal access to knowledge for students in different tracks (Goodlad, 1984; Oakes, 1985) but fails to give specific guidelines for how students can be grouped for instruction more equitably.

Our approach to the improvement of practice consists of three phases: first, the design of research itself must meet the criterion of eventual relevance of knowledge to practice; second, as explained later in the section on strategy, we shall maintain continuous contact with practitioner organizations, regional educational laboratories, and R&D Centers to disseminate research in ways useful to practice; finally, we anticipate in future years conducting actual development activities to affect practice directly--for example, staff training materials, guidelines for curriculum development and evaluation, and resource materials for policymakers.

3. Provision of National Leadership

Beyond the conduct of specific research and development projects, the Center will stimulate among leading organizations and individuals a continuing interpretation and critique of trends in secondary schools, working toward creative visions for approaching the Center's mission. This objective will be accomplished by sponsoring special conferences and dialogues, by commissioning special papers to deal with emerging issues, and by maintaining regular contact with key organizations and other Centers and Labs. Leadership will be exercised not only by providing publicly visible meetings and publications but also by maintaining informal networks that help to mobilize attention to key issues. Activities aimed toward this objective will be initiated through the Center's program areas, its National Advisory Panel, and its office of Dissemination and Public Information.

Program Area Objectives and Overviews

Research and development objectives will be accomplished primarily through the work of five program areas, each with a separate objective aimed toward the general mission. A number of important themes which cut across the work of several areas are summarized as an introduction to the program areas.

Special populations such as minorities and students from low-income families must struggle continuously to succeed in many high schools. All program areas of the Center will examine the ways in which high schools create differential opportunities for these groups. We shall focus on those practices, policies, and allocations of resources that offer hope for boosting their engagement and achievement.

Adolescents are viewed as coproducers of their knowledge, affected profoundly by experiences in and out of schools. Instructional effectiveness is seen largely as the challenge of mobilizing student effort among students who vary considerably in their responsiveness to different content and teaching styles. How this can be done effectively will be studied specifically in the At-Risk Student program area, the Higher Order Thinking area, the Staff Working Conditions area, and the School Change area.

Administrators and teachers at the school site need help in managing their schools to enhance student engagement and achievement in ways responsive to their unique circumstances. All program areas will attempt to identify particular actions or strategies, especially the allocation of resources, which facilitate effective management. The School Change area will develop a synthesis and new theory on school-site levers, or working at the margins to improve an organization, and this theory can be viewed as a new attempt to conceptualize leadership itself. As we study the leadership, special attention will be given to strategies for building goal consensus within a school around major concerns of the proposal: academic achievement, commitment to at-risk students, higher order thinking in the curriculum, and the engagement of students and staff.

Deciding upon the proper content for high school curriculum is a persistent issue. In our view it would be inappropriate for the national center on secondary schools to attempt to prescribe content in specific curriculum areas. It is important, however, to study the ways in which various types of content contribute to student achievement and engagement, and this topic will be a major concern of the program areas on Academic Achievement, At-Risk Students, and Higher Order Thinking.

Researchers and policymakers alike have focused recently on differences between public and private secondary schools (e.g., Alexander & Pallas, 1983; Cain & Goldberger, 1983; Coleman et al., 1982; Morgan, 1983). The Center will look to private schools for ideas, especially in regard to creating a climate that fosters students' engagement. We will include private schools in our advisory network and in studies on Higher Order Thinking, Staff Working Conditions, and School Change. Our Clearinghouse syntheses, in the Academic Achievement

area, will summarize the relevance of emerging data on private schools for public school reform strategies.

1. Academic Achievement Program Area

Objective. To clarify relationships among different forms of academic achievement relevant to secondary schools and the ways that selected general policies (e.g., graduation requirements, tracking, competency testing) affect the achievement of different groups of students.

Overview. All program areas will be oriented toward the improvement of students' academic achievement, but this area will explore general issues that transcend the more specific concerns of the other four areas. Although the goal of enhancing academic achievement can hardly be disputed, our perspective on the contemporary reform movement and our description of the Center's mission mention several unresolved problems which this goal entails. The program area's initial work will attack four problems.

First, the conception and measurement of academic achievement appropriate for high schools needs considerable study. The need is evident in what appears to be increasing polarization over the issue of testing. Significant reports have advocated increased emphasis on standardized testing or competency testing (e.g., National Commission on Excellence in Education, 1983), but equally significant reports have vigorously opposed it (e.g., National Coalition of Advocates for Students, 1985; Public Education Information Network, 1985; Sizer, 1984). Disagreement over the role of testing to assess high school students' achievement reflects social disagreement over the purposes of schooling as described earlier and misinformation about the attributes of various tests. Basic skills tests, for example, often fail to assess the actual curriculum goals of high schools; SATs assess a narrow range of verbal and mathematical achievement aimed only at predicting college successs; and all tests seem to be so influenced by students' social background that they give little useful information about the specific contribution that different schools might make to student achievement. The program area will clarify alternative conceptions of achievement and the strengths and weaknesses of different approaches to developing schoolwide indicators of progress. In addition to tests, student participation in academic contests, debates, exhibitions, and publications will be reviewed. The point will be to assist high schools in selecting indicators of achievement appropriate to the purposes they seek.

Second, school districts, states, and national organizations have initiated a variety of policies to boost students' academic achievement. Some involve organizational remedies such as voucher systems to increase access to different types of schools or new mechanisms for school-site management. Others involve curriculum remedies such as increased graduation requirements, improving textbook quality, or core curriculum. Others focus on staff development to enhance teacher expectations, technique, and knowledge of subject matter. Still others involve new testing and evaluation strategies. Practitioners and policy makers will

want to know of the effects of such reforms, but there is no organized mechanism for keeping track of and synthesizing information on their impact. The program area will gather together existing syntheses and conduct a continuing set of reviews of findings on the impact of general reform strategies in improving high school academic achievement. During the third year this material will form the basis for a limited Clearinghouse on the effects of interventions on achievement. On request the Clearinghouse will provide information to practitioners throughout the nation.

Third, the program area will study one of the most persistent issues facing secondary schools: tracking in both middle and high schools. The practice has been defended as a strategy for helping students aspire to different careers and for maximizing instructional efficiency. It has also been vigorously opposed on the ground that it denies prematurely and without foundation career choice and learning opportunities to students placed in vocational or general tracks, consigning them permanently to lower status in society. The program area will contribute original research on the effects of tracking in middle school and the relationship of instructional practice in different tracks to high school achievement. The research will specifically address the hypothesis that the content of the curriculum varies systematically across tracks and is the primary cause of differences in student achievement. The research will be conducted in history and English classes; student knowledge and writing skills will be examined.

Finally, as part of our efforts to explore new topics for research, we have placed in the Academic Achievement area two small but important studies examining the impact of issues in adolescent development on academic achievement. Successful practices in secondary schools usually reflect an awareness of students as coproducers of the knowledge they obtain (Lipsitz, 1984; McNeil, 1983; Newmann & Sleeter, 1982). Unfortunately, education policies too often imply erroneous assumptions about the conditions required to motivate adolescents to engage in academic work, especially the assumption that high grades or admission to college are sufficient rewards. The program area will contribute new information on selected issues in adolescent development, focusing initially on the development of responsibility for self-management and a better understanding of the determinants of learned helplessness in academic tasks.

2. Higher Order Thinking Program Area

Objective. To describe barriers and opportunities for more emphasis on higher order thinking in the curriculum, with special reference to the humanities and the use of computers.

Overview. Recent studies have criticized high school curriculum for its failure to challenge students to develop their full intellectual potential. The criticisms can be boiled down to two main points: (a) there are too many unrelated courses with no general coherence to the course of study, and (b) the content of individual courses is likely to be superficial, lacking in depth or academic rigor, and demanding that

students perform only low level cognitive tasks (memorizing isolated concepts and bits of information and mechanically applying algorithms). Critiques vary in their assumptions and ultimate goals for the curriculum, but a common theme of both conservative and progressive critics is that students should be challenged to use their minds at higher levels: the curriculum should place more emphasis on the development of higher order thinking.

The most visible response has been to increase academic course requirements for graduation. Without major changes in the way academic subjects are taught, however, increasing requirements of this sort will not reduce the fragmentation of knowledge and the predominance of lower order cognitive activity which currently characterize much academic coursework. Furthermore, increased academic requirements alone may drive many students out of school (McDill, Natriello, & Pallas, 1985).

Rather than focusing on what subjects should be taught, we shall concentrate on strategies for increasing academic rigor across subjects, and we use the broad concept of higher order thinking to encompass diverse concerns for intellectual rigor.

The definition of higher order thinking is itself a complex task to be undertaken in the planned research, but Sternberg's (1985) analysis commissioned for the planning of the Center proposal and the synthesis of other work by Patterson and Smith (in press) provide a foundation. Higher order thinking occurs when a person interprets, manipulates, or synthesizes information in a complex, usually novel, way because the problem faced cannot be solved through routine application of previously learned knowledge. Higher order thinking may involve complex forms of verbal reasoning as in philosophical argument, perception of subtle patterns in physical phenomena or human behavior, and forms of creative work that may not conform to logical or linear models. In contrast, lower order thinking involves acquiring information through repetitive routines such as memorizing vocabulary or state capitals, inserting numbers into previously learned formulae and computing with familiar algorithms, and applying rules for footnote format in a research paper.

Without developing the argument in detail, four main reasons justify an increased emphasis on higher order thinking in high school. As technological complexity increases, higher order skills are needed for a productive work life--both to carry out the demands of diverse occupations and to enable persons to think intelligently about the many occupational adaptations that may be necessary over a lifetime. Second, productive citizenship in a democracy requires that persons be able to comprehend complex principles regarding the structure and functions of government and to reason about complex policy issues. Third, higher order thinking should be promoted simply to allow humans to fulfill their inherent potential to use their minds. Finally, increased opportunities for higher order thinking are likely to enhance student engagement in academic work where the persistent absence of meaningful challenge dulls the heart and mind. In spite of considerable rhetoric endorsing arguments such as these, studies have consistently noted the absence of higher order thinking in high school classrooms (Goodlad, 1984; Sizer, 1984; Stake & Easley, 1978).

The case for higher order thinking is best made, perhaps, through examples of its success in schools. In spite of its general absence, we know of a variety of exciting programs--a tenth-grade required U.S. history course focused on the analysis of persisting policy issues in which students are taught to clarify and defend their interpretations through dialogue and position papers; a computer science course in which students create information systems to assist their family's farm or retail business; an eighth-grade science program focused on students' developing generalizations about the ecology of a local marsh. Studies proposed by the area will learn more about exemplary practices.

The area will collaborate with the Center on Learning to keep abreast of studies of students' psychological processes. The work here will be distinct, however, in its emphasis upon general barriers and opportunities traceable to dynamics of high schools' organizational life and secondary teachers' conceptions of their work. The research will focus initially on higher order thinking in the humanities and on the use of computing technology to teach higher order thinking across the curriculum.

3. At-Risk Student Program Area

Objective. To understand how at-risk students are affected by schoolwide improvement programs, special alternative programs, and district policies related to attendance and admission.

Overview. The most obvious indicators of student disengagement in academic work are dropout rates. Since 1972, the nation's high school dropout rate has increased by about 10% to more than 25%, and in many inner city schools as many as 50% of minority students drop out. High school completion alone should not be taken as an adequate indicator either of student engagement or actual achievement, for many unengaged students can complete high school with only mediocre achievement, and even high achieving students may show only minimal intrinsic interest in school. For the vast majority of students, however, school attendance and completion is a precondition for improving academic achievement. Apart from the dropout rate, other data from cities like Milwaukee and Chicago indicate enormous rates of failure in ninth-grade coursework and substantial proportions of high school graduates who cannot read above the eighth-grade level (Designs for Change, 1985). National inquiries into this problem (e.g., by the Education Commission of the States) have led experts to conclude that, for major portions of urban youth, high school is largely irrelevant in the transition from childhood to adulthood. As one expert testified, "It is inaccurate to view these young people as 'drop outs'; they never really dropped in" (Robinson, 1985).

This program area will focus on what high schools can do to enhance the engagement and achievement of potential dropouts, defined as those students with histories of consistent failure in school. These students come disproportionately from minority and low-income families, and they are educationally at risk because of the likelihood of dropping out or of achieving only at low levels in school. Research has shown steps that some districts have taken to boost achievement of at-risk students

in elementary schools (Eubanks & Levine, 1983), but high school research has yet to produce comparable results.

The program area will be guided by a sensitivity to the profound disengagement of at-risk students in high school. According to previous research summarized by Wehlage, Stone, and Kliebard (1980), students must be bonded to or identify with school if they are to invest themselves seriously in school work. This identification or bonding can be instrumental when the student views engagement in school primarily as an effective means for achieving future goals. It may also be cultural when schooling is seen essentially as an expression or extension of the student's cultural background.

For many at-risk students, neither of these bonds exist. The school lacks instrumental value (Ogbu, 1974, 1978) when, because of previous failure, the student loses a sense of efficacy in school tasks and/or when the student perceives that even success in school will not deliver adequate future rewards (e.g., because of "job ceilings"). The school fails to provide a cultural bond when its practices and goals conflict with the student's family and cultural background. Cultural conflict or disjuncture may be subtle (e.g., teachers assuming that all students have enough time and privacy at home to study) or blatant (curriculum that teaches history and literature only from the point of view of dominant elites).

Existing programs to reduce the dropout rate may respond to aspects of this analysis. For example, efforts to secure jobs for at-risk students may increase instrumental engagement through future economic rewards, and programs that develop a family-like environment in school try to establish a new basis of trust between students and staff. The most useful approaches will be responsive to the composition of the at-risk population in a particular school. A suburban middle class school may have only a small proportion of seriously disengaged students. An often successful strategy for these schools is to develop group projects such as remodeling houses, where students learn important basic skills within a cooperative project producing tangible results. An inner city school may find 80% of its students seriously at risk, and such projects would be difficult to manage on a large scale. A schoolwide strategy would have to be developed.

The program area will initially conduct three main studies: one on schoolwide programs, one on special programs within schools, and one on district policies that affect the accessibility of at-risk students to programs for special assistance. The goal will be to discover promising approaches to the engagement of at-risk students in different types of schools and eventually to assist schools in the implementation of new programs.

4. Staff Working Conditions Program Area

Objective. To clarify the working conditions in high schools that tend to enhance teacher engagement and commitment and the extent to which these conditions can be deliberately altered at the school site.

Overview. Efforts to improve students' academic achievement can aim at curriculum content, program structures, testing, and other matters, but ultimately the nature of interaction between student and teacher probably has more impact than any other single factor. The significance of teachers is recognized by the establishment of two NIE centers focused directly upon them. To contribute useful knowledge on effective secondary schools this Center must also study teachers. Our mission, however, is different from the other two centers, for we shall focus specifically upon how the working conditions of teachers in secondary schools might be modified by those schools in order to boost students' academic achievement. This somewhat distinct approach will be complemented through collaboration with the Center on Teacher Quality and Effectiveness.

One of the most consistent findings of recent reports on high schools (summarized by Goodlad, 1984; Powell et al., in press; Sizer, 1984), of ethnographic studies (Cusick, 1983; McNeil, in press), and of several high school teachers and administrators whom we consulted during the planning phase is the often dull, emotionally flat, passive nature of classroom teaching. When experienced observers comment upon secondary school teaching, the primary diagnosis is not an absence of proper technique; instead, the central problem is usually more fundamental: a lack of vitality or spark, a profound disengagement of teachers from students and the craft of teaching. To be sure, recent studies (e.g., Lightfoot, 1983; Sizer, 1984) have also found impressive examples of exciting, highly engaged high school teachers, but the exceptions dramatize even further the more consistent finding of disengagement.

Research on how to make teachers more effective can take two general approaches: the first or "pedagogical" is to search for specific techniques and practices associated with specific types of student learning; the second is to search for general, underlying processes that ultimately influence the success of pedagogy--the conditions that engage teachers in their work. This program area has chosen the second route to improve instructional effectiveness. To focus on pedagogy could unnecessarily restrict the Center's work to the teaching of particular subjects when the Center's mission is to study secondary schools more as complex organizations. This is not to suggest that teacher engagement alone signifies effective instruction or that it serves as a substitute for sound pedagogy. Rather, it is a prior necessity on which the power of pedagogy depends.

Several problems in high school teachers' working conditions are likely to affect teacher engagement: lack of power, isolation, scarce resources, tension between controlling students and teaching them, and low status. Reform efforts have tried to address some of these. Involving teachers more actively in curriculum development or planning for school improvement may help to empower them and reduce isolation. Resources might be increased through reducing class loads and offering special sabbaticals. Status might be improved through salary increases and new forms of status in career ladders. More effective school discipline policy might relieve some of the tension due to custodial responsibilities. There is virtually no research, however, which

assesses the effects of such practices on teachers' engagement. As indicated in Stevenson's (1985) review of research on staff development commissioned during the planning phase, we know very little about the effects of staff development efforts to address some of the problems.

Instead of studying the above interventions separately, we shall learn about their potential first by careful study of the nature of teacher engagement and disengagement in the contexts of their schools. With some knowledge of the meaning that teachers and principals attach to different working conditions, we shall then study schools which deliberately attempt to alter the conditions. We know of several schools, for example, which are trying to help teachers organize into small teams that take more extensive instructional responsibility for a smaller number of students than is customary in the conventional comprehensive school and of principals who encourage teachers to determine the focus of staff development programs. The study of such efforts should lead eventually to knowledge and recommendations about the ways in which high school working conditions must be changed in order to maximize the kind of teacher engagement that in turn encourages student engagement in academic work.

5. School Change Program Area

Objective. To describe the kinds of organizational changes that can be undertaken within high schools to increase academic achievement and the extent to which changes may require major structural alterations in school-site autonomy.

Overview. As indicated earlier, previous research has expanded our awareness of the institutional complexity of secondary schools, but it has failed to produce powerful general insights about how to change secondary schools. In fact much of the research on school change either indicates widespread failure of school reform efforts (e.g., Berman & McLaughlin, 1978; Herriott & Gross, 1979; Popkewitz et al., 1982; Weiss, 1978) or attributes successful efforts to variables difficult to manipulate at the school site, such as the leadership of a director or extensive support from key constituencies (Ford Foundation, 1972).

Other program areas will offer insights on the change process in regard to specific goals such as improved programs for at-risk students, greater emphasis on higher order thinking in the curriculum, changing working conditions to enhance staff engagement, or modifications in the tracking system to maximize learning opportunities. The School Change Program Area will synthesize findings about change aimed at these targets. It will also investigate results from the sponsorship of high school improvement programs by states, local districts, and nongovernmental organizations (e.g., the projects of Carnegie, Atlantic-Richfield, and National Association of Secondary School Principals; Sizer's Coalition of Essential Schools; the futures planning network of ASCD).

The purpose is to develop more powerful theory on secondary school change, but change is not conceived as open-ended or without substance. We wish to explain how schools might change in the direction

communicated by the mission of the Center: the improvement of academic achievement by taking actions at the school site to enhance student engagement. The mission can be approached by working toward the more particular directions pursued by the other program areas and toward selected characteristics suggested by literature on effective schools (e.g., goal consensus or high expectations) which may not always be highlighted by a program area.

The analysis of school change in these directions will be guided by two central ideas suggested in previous research. The first is that changes are most successful when school administrators and staff members work at the "margins" of an organization, rather than trying to alter its fundamental structure. For example, several schools in the Coalition for Essential Schools aim in the long-run toward major schoolwide changes in curriculum and scheduling, but they begin with projects restricted to the ninth grade and a small voluntary group of faculty. A recent review of data on the California School Improvement Program commissioned during the planning process (Marsh, 1985) explained how teachers and administrators found many ways of creating new programs or improving existing ones without taking on the risks of broad scale schoolwide reform. In spite of the harsh critiques of secondary schools, other research shows both that fundamental structural changes are unlikely and that marginal, program specific changes can be effective. We need to understand more about how marginal changes can be successfully implemented.

Another conclusion of much research, however, points to the necessity of change that does approach serious structural dimensions: the need for greater autonomy and empowerment at the school site (Klausmeier, in press; Purkey & Smith, 1985; Turnbull, Smith, & Ginsburg, 1981). In spite of the attractiveness of this conclusion, it is also clear that schools must be accountable to external units and agencies (especially to school districts and states) and that the external units themselves may help individual schools to improve. This presents an important problem: how can schools develop the degree of autonomy necessary to make meaningful changes in the directions suggested above, but at the same time maintain connections with external units necessary both for social accountability and for receipt of needed resources? Therefore, in addition to the study of change at the margins within schools, the program area will try to learn how a constructive balance between school autonomy and accountability can be developed.

The area will synthesize a variety of literatures related to these issues and examine the experience of high schools involved in diverse change efforts. Its work will be assisted through collaboration primarily with the Center on Effective Elementary Schools and the Center on State and Local Policy Development.

Strategies

The Center's overall objectives for five years and the specific program objectives will be accomplished through several strategies. Emphasis will be given to (a) developing a process of continuous review

and evaluation of the research, development, and leadership functions, (b) using multiple research methods, (c) stimulating practitioner involvement, (d) building collaborative relationships with relevant organizations, and (e) a vigorous dissemination program.

1. Continuous Review and Evaluation

The Center will build a review and evaluation process to guide the Center with both procedural and substantive recommendations for further work. The process will include annual reviews by the National Advisory Panel and by a Research Review Committee consisting of five area coordinators within the Center and five outside researchers. Supplementing these groups, the Center will seek ongoing input from other Centers and Labs, from practitioner organizations described below, from independent scholars with expertise on specific issues, and from a continuing network of high schools affiliated with the Center. The process will be designed to maintain a balance between a continuous core program focused on the current mission and generation of new work based on unforeseen developments. New projects may grow out of existing work or strike out in new directions suggested by the National Advisory Panel or other advisory groups.

Each program area has developed long-range plans to allow for modification of work now tentatively planned for the period 1987-1990. For example, the Academic Achievement area will do exploratory work on adolescent development that may lead to more substantial projects. The At-Risk Student area anticipates action research projects with schools in future years. The Higher Order Thinking area plans to study the teaching of literature and to establish a network of schools with exemplary computer practices. The Staff Working Conditions area anticipates a study of schools attempting to change working conditions. The School Change area envisions a long-term examination of diverse change strategies.

Formal evaluations of Center work will be conducted in the spring of each year, directed by the National Advisory Panel. The Panel will receive input from the Research Review Commitee which examines the management and technical quality of specific projects. The Panel's main task will be to review productivity of the previous year in regard to the overall program objectives and to guide proposal preparation for the coming year. The spring '86 review will concentrate on plans for implementing the current proposal and collaboration with other agencies. The spring '89 review will devote special attention to pulling together the five years' work. Prior to dissemination, each project will obtain an outside review from appropriate researchers and/or practitioners, and the reviews will be discussed among program area coordinators.

2. Multiple Research Methods

The research will include multiple methods, relying heavily upon interdisciplinary perspectives. Syntheses of existing literature will be undertaken on several topics including the relationship among various conceptions of high school achievement, the conditions that affect high school teachers' engagement in teaching, theories of educational change

as applied to high schools as unique organizations, and the relationship between theoretical writing on higher order thinking and teachers' conceptions of it. New analyses of existing data bases will also be undertaken, focusing especially upon High School and Beyond and its 1984 Supplemental Survey, the IEA and NAEP data sets, and case studies of the California Improvement Project.

As each program area reviews literature relevant to its work, research on education in other countries will be consulted. The Academic Achievement area will look internationally for alternative approaches to testing achievement; the Higher Order Thinking area will examine the extent to which the more intensive academic curriculum in other countries actually involves higher order thinking; the At-Risk Student area will review the way other nations respond to potential dropouts; the Staff Working Conditions area will analyze how differences in teacher status and roles in high schools abroad affect teacher engagement; and the School Change area will compare issues of local school management in the U.S. with those in more centralized systems.

By consulting individuals with vast experience in observing and intepreting high schools, the Center will also probe sources of knowledge which have not developed into published form. We plan, for example, to convene a group of authorities who have conducted site visits for secondary school recognition programs of the U.S. Department of Education and the Ford Foundation, along with others who have conducted high school case studies for some of the national reports.

The Center will undertake original empirical work using observational, ethnographic, and survey methods, and, we hope, field experiments and interventions later in the grant period. This research will be designed to facilitate comparisons between different types of schools in terms of socioeconomic and demographic character, exemplary or nonexemplary practices, and public and private sponsorship. The research will also be designed to learn more about the individual school as a complex organization and the experience of different groups of students and teachers within schools. Studies will also attempt to follow the experience of students and schools over time--in several cases over the course of a full academic year, and in some cases over a two- or three-year period.

Several fields of knowledge will be applied to the study of secondary schooling, using staff expertise at the University of Wisconsin and beyond. Diverse disciplinary orientations represented by Center investigators include the sociology and social psychology of organizations, psychology, policy analysis, philosophy, English, educational administration, and curriculum and instruction. The proposed work has been developed through collaboration among these individuals, and it will be conducted in ways that continue an interdisciplinary dialogue.

3. Practitioner Involvement

The gulf between educational researchers and practitioners is well known, and the barriers to crossing it are substantial (Barlow, Hayen, & Nelson, 1984; Cazden, 1983; Glaser, Abelson, & Garrison, 1983). But powerful understandings about how secondary schools work (and could work) cannot be created without extensive interaction between the schools and the academy. The point is not to investigate only those questions that practitioners pose or to plead for practitioners constantly to modify practice according to researchers' findings. Instead, insights emerging in one arena must be continually tested in the other. Without an iterative process, neither the knowledge of researchers nor that of practitioners is likely to produce adequate explanations of schools and their improvement. Practitioners should be involved in the conception, execution, and evaluation of research and, of course, in development activities aimed at school improvement.

The development of our final proposal was guided by three waves of input from practitioners. We invited an outside evaluation team to critique our planning proposal in February 1985, and two of the three members had extensive experience working with urban high schools. In May 1985, our staff met with a principal and a teacher from each of five high schools (two urban, one rural, one suburban, one private). The teachers' major fields were English, social studies, math, music, and counseling. The high school representatives reacted favorably to our proposal, suggested modifications, and contributed to the planning of a continuing network of high schools to provide feedback on research and development ideas. Finally, suggestions on the direction of the Center were solicited and received from practitioner organizations who agreed to assist the Center in the conduct and dissemination of its research.

Future involvement of practitioners in the Center is proposed through three main activities: (a) practitioner representation on the National Advisory Panel; (b) continuing input from the practitioner organizations in both the conduct of research and its dissemination; (c) an ongoing cooperative relationship with a network of up to eight high schools whose staff will meet once a year with Center staff, and who will offer continuous opportunities for Center researchers to conduct pilot inquiries and to discuss research findings with staff at each school.

4. Collaborative Relationships

Collaboration with other Centers and Labs will be important in the planning of future work, in its execution, and in dissemination. We envision several specific activities related to our goals of knowledge development, improving practice, and providing national leadership. The Center will consult with other agencies on tasks such as: developing bibliographies for literature syntheses, identifying exemplary schools, identifying networks of practitioners and researchers for dissemination activities, and most importantly the planning of future work. In addition to consultation through individual and small group meetings and commissioning of short papers, we shall explore the possibility of jointly sponsored conferences and publications and of collaborative

research and development projects. We anticipate relationships involving each of the following Centers: Effective Elementary Schools, Learning, Writing, Testing, Technology, Teacher Quality, and State and Local Policy.

5. Dissemination

Dissemination strategies will also be aimed toward the three overall objectives. We will use the most powerful existing channels of dissemination rather than create new ones, and we will target specific products to specific audiences selected to maximize the multiplier effect. This approach entails working closely with organizations mentioned above and using continuing consultation to identify additional networks of researchers and practitioners.

Summary

Contributions of the Center to theory and to practice can be summarized through a review of some of the anticipated results for each program area. The Academic Achievement area will advance theory on the nature of achievement itself and the way in which achievement is affected by students' opportunity to learn content as mediated by tracking. The work will yield practical recommendations for high school administrators and teachers on testing and grouping policy and summaries of the effects of popular reform strategies to assist policymakers.

The program area on Higher Order Thinking in High School Humanities will synthesize theory on the nature of higher order thinking, on adolescents' ability to engage in it, and on organizational aspects of schools that affect it. Its practical benefits will be guidelines for how schools can introduce more higher order thinking in the humanities and in diverse curriculum areas through the use of computers.

The program area on At-Risk Students will further elaborate theory on the nature of personal and institutional support needed to engage alienated students in academic work and offer guidelines for developing effective schoolwide programs, special programs within schools, and district policies to maximize opportunities for at-risk students to achieve.

The Staff Working Conditions program area will build on existing organizational theory and studies of the intrinsic rewards of teaching to develop a more complete theory of the relationship between working conditions and teachers' engagement in high school teaching. This will result in recommendations to principals and district level policymakers on what working conditions at the school level could be changed to enhance teacher engagement.

The School Change program area will apply theories of organizational change to the problem of creating characteristics of "effective schools," focusing primarily on the problem of creating an optimal balance between school-site autonomy and responsiveness to legitimate external demands. Practical benefits will include identification of specific changes and policies which successful schools have used.

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III. FUTURES PAPER

NATIONAL CENTER ON EFFECTIVE SECONDARY SCHOOLS

Mission

In recent years more than 30 national projects have cast attention on U.S. secondary schools. Current enthusiasm for reform in secondary schools is welcome, but previous research lends a note of realism to the magnitude of the task. Societal disagreement on goals for secondary education, diversity among schools, diversity of students within schools, loose linkages among different agencies that affect schools, and a fragmented research base all create persistent obstacles to broad scale reform.

We believe the National Center on Effective Secondary Schools can confront these complexities with a mission directed toward improving academic achievement of all students, with special attention to the needs of disadvantaged and less successful students. In our view research on improving academic achievement should be guided by three central assumptions: (a) that the conception and measurement of appropriate forms of achievement are themselves problematic--the mission should not be construed simply as increasing student scores on tests currently in use; (b) that to improve academic achievement, we must first understand how to increase student engagement in academic work; and (c) that although policies and conditions originating beyond the school have substantial impact on student achievement, more attention must be given to levers at the school site; that is, to the strategies that teachers and administrators can use to alter conditions in their own schools to increase students' engagement and achievement.

Five-Year Program Plan

The program to carry out the mission will be guided by three long-range objectives: the development of knowledge, the improvement of practice, and the provision of national leadership.

Development of Knowledge. The basic purpose of the Center is to advance knowledge of factors and processes that shape secondary education. Recent studies offer a foundation on which to build, but large gaps in knowledge remain, because each of the major studies of secondary schools to date (e.g., Boyer, 1983; Coleman, Hoffer, & Kilgore, 1982; Cusick, 1973, 1983; Goodlad, 1984; Lightfoot, 1983; Lipsitz, 1984; Metz, 1978, in press; Powell, Farrar, & Cohen, in press; Rutter, Maughan, Mortimore, & Ouston, 1979; Sizer, 1984) suffers from one or more of the following problems: lack of a design that shows the effect of specific aspects of schooling on student outcomes over time; lack of information which captures the complexity of local school settings, especially the experience of different groups of students within school; and lack of attention to manageable factors at the school site that can improve education. The Center will not be able to rectify

all these deficiencies, but it will be able to build on promising aspects of the existing knowledge base.

Improvement of Practice. The ultimate goal of knowledge development in a center of this sort is the improvement of practice in secondary schools. Unfortunately, much previous research carries few implications for secondary school improvement. For example, some research finds that effective schools have strong leadership by the principal and high expectations by teachers for students' success (Cohen, 1983) but does not explain how schools that struggle with weak leadership and low expectations can alter these conditions. Other research shows unequal access to knowledge for students in different tracks (Goodlad, 1984; Oakes, 1985) but fails to give specific guidelines for how students can be grouped for instruction more equitably.

This problem can be overcome by a three-phase approach to the improvement of practice: first, the design of research itself must meet the criterion of eventual relevance of knowledge to practice; second, the Center will need to maintain continuous contact with practitioner organizations, regional educational laboratories, and other research centers to disseminate research in ways useful to practice; finally, in future years the Center should conduct actual development activities to affect practice directly--for example, staff training materials, guidelines for curriculum development and evaluation, and resource materials for policymakers.

Provision of National Leadership. Beyond the conduct of specific research and development projects, the Center will stimulate among leading organizations and individuals a continuing interpretation and critique of trends in secondary schools, working toward creative visions for approaching the Center's mission. This objective can be accomplished by sponsoring special conferences and dialogues, by commissioning special papers to deal with emerging issues, and by maintaining regular contact with key organizations and other Centers and Labs. Leadership will be exercised not only by providing publicly visible meetings and publications but also by maintaining informal networks that help to mobilize attention to key issues.

We envision the National Center on Effective Secondary Schools carrying out research and development work in five critical areas, each with a separate objective aimed toward the general mission. These are described briefly below.

1. Academic Achievement

Objective. To clarify relationships among different forms of academic achievement relevant to secondary schools and the ways that selected general policies (e.g., graduation requirements, tracking, competency testing) affect the achievement of different groups of students.

Overview. Although the goal of enhancing academic achievement can hardly be disputed, several unresolved problems exist in attaining this goal. Initial work in this area will attack four problems.

First, the conception and measurement of academic achievement appropriate for high schools needs considerable study. The need is evident in what appears to be increasing polarization over the issue of testing. Significant reports have advocated increased emphasis on standardized testing or competency testing (e.g., National Commission on Excellence in Education, 1983), but equally significant reports have vigorously opposed it (e.g., National Coalition of Advocates for Students, 1985; Public Education Information Network, 1985; Sizer, 1984). Disagreement over the role of testing to assess high school students' achievement reflects social disagreement over the purposes of schooling and misinformation about the attributes of various tests. Basic skills tests, for example, often fail to assess the actual curriculum goals of high schools; SATs assess a narrow range of verbal and mathematical achievement aimed only at predicting college successs; and all tests seem to be so influenced by students' social background that they give little useful information about the specific contribution that different schools might make to student achievement. The secondary school center will clarify alternative conceptions of achievement and the strengths and weaknesses of different approaches to developing schoolwide indicators of progress. In addition to tests, student participation in academic contests, debates, exhibitions, and publications should be reviewed. The point is to assist high schools in selecting indicators of achievement appropriate to the purposes they seek.

Second, school districts, states, and national organizations have initiated a variety of policies to boost students' academic achievement. Some involve organizational remedies such as voucher systems to increase access to different types of schools or new mechanisms for school-site management. Others involve curriculum remedies such as increased graduation requirements, improving textbook quality, or core curriculum. Others focus on staff development to enhance teacher expectations, technique, and knowledge of subject matter. Still others involve new testing and evaluation strategies. Practitioners and policymakers will want to know of the effects of such reforms, but there is no organized mechanism for keeping track of and synthesizing information on their impact. One role of the new Center will be to gather together existing syntheses and conduct a continuing set of reviews of findings on the impact of general reform strategies in improving high school academic achievement. By the third year of the Center's existence this material will form the basis for a limited Clearinghouse on the effects of interventions on achievement. The Clearinghouse will be able to provide information to practitioners throughout the nation.

Third, the Center will study one of the most persistent issues facing secondary schools: tracking in both middle and high schools. The practice has been defended as a strategy for helping students aspire to different careers and for maximizing instructional efficiency. It has also been vigorously opposed on the ground that it denies prematurely and without foundation career choice and learning opportunities to students placed in vocational or general tracks, consigning them permanently to lower status in society. The Center will contribute original research on the effects of tracking in middle school and the relationship of instructional practice in different tracks to

high school achievement. The research will specifically address the hypothesis that the content of the curriculum varies systematically across tracks and is the primary cause of differences in student achievement.

Finally, we would include two small but important studies examining the impact of issues in adolescent development on academic achievement. Successful practices in secondary schools usually reflect an awareness of students as coproducers of the knowledge they obtain (Lipsitz, 1984; McNeil, 1983; Newmann & Sleeter, 1982). Unfortunately, education policies too often imply erroneous assumptions about the conditions required to motivate adolescents to engage in academic work, especially the assumption that high grades or admission to college are sufficient rewards. The two studies would contribute new information on selected issues in adolescent development, focusing initially on the development of responsibility for self-management and a better understanding of the determinants of learned helplessness in academic tasks.

2. Higher Order Thinking

Objective. To describe barriers and opportunities for more emphasis on higher order thinking in the curriculum, with special reference to the humanities and the use of computers.

Overview. Recent studies have criticized high school curriculum for its failure to challenge students to develop their full intellectual potential. The criticisms can be boiled down to two main points: (a) there are too many unrelated courses with no general coherence to the course of study, and (b) the content of individual courses is likely to be superficial, lacking in depth or academic rigor, and demanding that students perform only low level cognitive tasks. Critiques vary in their assumptions and ultimate goals for the curriculum, but a common theme of both conservative and progressive critics is that students should be challenged to use their minds at higher levels: the curriculum should place more emphasis on the development of higher order thinking.

The most visible response has been to increase academic course requirements for graduation. Without major changes in the way academic subjects are taught, however, increasing requirements of this sort will not reduce the fragmentation of knowledge and the predominance of lower order cognitive activity which currently characterize much academic coursework. Furthermore, increased academic requirements alone may drive many students out of school (McDill, Natriello, & Pallas, 1985).

Rather than focusing on what subjects should be taught, Center research will concentrate on strategies for increasing academic rigor across subjects, using the broad concept of higher order thinking to encompass diverse concerns for intellectual rigor.

Without developing the argument in detail, four main reasons justify an increased emphasis on higher order thinking in high school. As technological complexity increases, higher order skills are needed for a productive work life--both to carry out the demands of diverse

occupations and to enable persons to think intelligently about the many occupational adaptations that may be necessary over a lifetime. Second, productive citizenship in a democracy requires that persons be able to comprehend complex principles regarding the structure and functions of government and to reason about complex policy issues. Third, higher order thinking should be promoted simply to allow humans to fulfill their inherent potential to use their minds. Finally, increased opportunities for higher order thinking are likely to enhance student engagement in academic work where the persistent absence of meaningful challenge dulls the heart and mind. In spite of considerable rhetoric endorsing arguments such as these, studies have consistently noted the absence of higher order thinking in high school classrooms (Goodlad, 1984; Sizer, 1984; Stake & Easley, 1978).

The case for higher order thinking is best made, perhaps, through examples of its success in schools. In spite of its general absence, we know of a variety of exciting programs--e.g., a tenth-grade required U.S. history course focused on the analysis of persisting policy issues in which students are taught to clarify and defend their interpretations through dialogue and position papers; a computer science course in which students create information systems to assist their family's farm or retail business; an eighth-grade science program focused on students' developing generalizations about the ecology of a local marsh. The Center can help identify and provide information on such exemplary practices.

3. At-Risk Students

Objective. To understand how at-risk students are affected by schoolwide improvement programs, special alternative programs, and district policies related to attendance and admission.

Overview. The most obvious indicators of student disengagement in academic work are dropout rates. Since 1972, the nation's high school dropout rate has increased by about 10% to more than 25%, and in many inner city schools as many as 50% of minority students drop out. High school completion alone should not be taken as an adequate indicator either of student engagement or actual achievement, for many unengaged students can complete high school with only mediocre achievement, and even high achieving students may show only minimal intrinsic interest in school. For the vast majority of students, however, school attendance and completion is a precondition for improving academic achievement. Apart from the dropout rate, other data from cities like Milwaukee and Chicago indicate enormous rates of failure in ninth-grade coursework and substantial proportions of high school graduates who cannot read above the eighth-grade level (Designs for Change, 1985). National inquiries into this problem (e.g., by the Education Commission of the States) have led experts to conclude that, for major portions of urban youth, high school is largely irrelevant in the transition from childhood to adulthood. As one expert testified, "It is inaccurate to view these young people as 'drop outs'; they never really dropped in" (Robinson, 1985).

The Center will focus on what high schools can do to enhance the engagement and achievement of potential dropouts, defined as those students with histories of consistent failure in school. These students come disproportionately from minority and low-income families, and they are educationally at risk because of the likelihood of dropping out or of achieving only at low levels in school. Research has shown steps that some districts have taken to boost achievement of at-risk students in elementary schools (Eubanks & Levine, 1983), but high school research has yet to produce comparable results.

The research will be guided by a sensitivity to the profound disengagement of at-risk students in high school. According to previous research summarized by Wehlage, Stone, and Kliebard (1980), students must be bonded to or identify with school if they are to invest themselves seriously in school work. This identification or bonding can be instrumental when the student views engagement in school primarily as an effective means for achieving future goals. It may also be cultural when schooling is seen essentially as an expression or extension of the student's cultural background.

For many at-risk students, neither of these bonds exist. The school lacks instrumental value (Ogbu, 1974, 1978) when, because of previous failure, the student loses a sense of efficacy in school tasks and/or when the student perceives that even success in school will not deliver adequate future rewards (e.g., because of "job ceilings"). The school fails to provide a cultural bond when its practices and goals conflict with the student's family and cultural background. Cultural conflict or disjuncture may be subtle (e.g., teachers assuming that all students have enough time and privacy at home to study) or blatant (curriculum that teaches history and literature only from the point of view of dominant elites).

Existing programs to reduce the dropout rate may respond to aspects of this analysis. For example, efforts to secure jobs for at-risk students may increase instrumental engagement through future economic rewards, and programs that develop a family-like environment in school try to establish a new basis of trust between students and staff. The most useful approaches will be responsive to the composition of the at-risk population in a particular school.

The Center will conduct research on schoolwide programs, on special programs within schools, and on district policies that affect the accessibility of at-risk students to programs for special assistance. The goal will be to discover promising approaches to the engagement of at-risk students in different types of schools and eventually to assist schools in the implementation of new programs.

4. Staff Working Conditions

Objective. To clarify the working conditions in high schools that tend to enhance teacher engagement and commitment and the extent to which these conditions can be deliberately altered at the school site.

Overview. Efforts to improve students' academic achievement can aim at curriculum content, program structures, testing, and other matters, but ultimately the nature of interaction between student and teacher probably has more impact than any other single factor. The Secondary School Center will focus specifically upon how the working conditions of teachers in secondary schools might be modified by those schools in order to boost students' academic achievement. This somewhat distinct approach would be complemented through collaboration with the Center on Teacher Quality and Effectiveness.

One of the most consistent findings of recent reports on high schools (summarized by Goodlad, 1984; Powell et al., in press; Sizer, 1984), of ethnographic studies (Cusick, 1983; McNeil, in press), and of practitioners who have advised us is the often dull, emotionally flat, passive nature of classroom teaching. When experienced observers comment upon secondary school teaching, the primary diagnosis is not an absence of proper technique; instead, the central problem is usually more fundamental: a lack of vitality or spark, a profound disengagement of teachers from students and the craft of teaching. To be sure, recent studies (e.g., Lightfoot, 1983; Sizer, 1984) have also found impressive examples of exciting, highly engaged high school teachers, but the exceptions dramatize even further the more consistent finding of disengagement.

Research on how to make teachers more effective can take two general approaches: the first or "pedagogical" is to search for specific techniques and practices associated with specific types of student learning; the second is to search for general, underlying processes that ultimately influence the success of pedagogy--the conditions that engage teachers in their work. We would choose the second route to improve instructional effectiveness. To focus on pedagogy could unnecessarily restrict the Center's work to the teaching of particular subjects when the Center's mission is to study secondary schools more as complex organizations. This is not to suggest that teacher engagement alone signifies effective instruction or that it serves as a substitute for sound pedagogy. Rather, it is a prior necessity on which the power of pedagogy depends.

Several problems in high school teachers' working conditions are likely to affect teacher engagement: lack of power, isolation, scarce resources, tension between controlling students and teaching them, and low status. Reform efforts have tried to address some of these. Involving teachers more actively in curriculum development or planning for school improvement may help to empower them and reduce isolation. Resources might be increased through reducing class loads and offering special sabbaticals. Status might be improved through salary increases and new forms of status in career ladders. More effective school discipline policy might relieve some of the tension due to custodial responsibilities. There is virtually no research, however, which assesses the effects of such practices on teachers' engagement.

Instead of studying the above interventions separately, the Center should learn about their potential first by careful study of the nature of teacher engagement and disengagement in the contexts of their

schools. With some knowledge of the meaning that teachers and principals attach to different working conditions, the Center can then study schools which deliberately attempt to alter the conditions. We know of several schools, for example, which are trying to help teachers organize into small teams that take more extensive instructional responsibility for a smaller number of students than is customary in the conventional comprehensive school and of principals who encourage teachers to determine the focus of staff development programs. The study of such efforts should lead eventually to knowledge and recommendations about the ways in which high school working conditions must be changed in order to maximize the kind of teacher engagement that in turn encourages student engagement in academic work.

5. School Change

Objective. To describe the kinds of organizational changes that can be undertaken within high schools to increase academic achievement and the extent to which changes may require major structural alterations in school-site autonomy.

Overview. Previous research has expanded our awareness of the institutional complexity of secondary schools, but it has failed to produce powerful general insights about how to change secondary schools. In fact much of the research on school change either indicates widespread failure of school reform efforts (e.g., Berman & McLaughlin, 1978; Herriott & Gross, 1979; Popkewitz, Tabachnick, & Wehlage, 1982; Weiss, 1978) or attributes successful efforts to variables difficult to manipulate at the school site, such as the leadership of a director or extensive support from key constituencies (Ford Foundation, 1972).

Research in the preceding four areas will offer insights on the change process in regard to specific goals such as improved programs for at-risk students, greater emphasis on higher order thinking in the curriculum, changing working conditions to enhance staff engagement, or modifications in the tracking system to maximize learning opportunities. The Center will synthesize findings about change aimed at these targets. It will also investigate results from the sponsorship of high school improvement programs by states, local districts, and nongovernmental organizations (e.g., the projects of Carnegie, Atlantic-Richfield, and National Association of Secondary School Principals; Sizer's Coalition of Essential Schools; the futures planning network of ASCD).

The purpose is to develop more powerful theory on secondary school change, but change is not conceived as open-ended or without substance. We wish to explain how schools might change in the direction communicated by the mission of the Center: the improvement of academic achievement by taking actions at the school site to enhance student engagement.

The analysis of school change in this direction will be guided by two central ideas suggested in previous research. The first is that changes are most successful when school administrators and staff members work at the "margins" of an organization, rather than trying to alter its fundamental structure. For example, several schools in the

Coalition for Essential Schools aim in the long-run toward major schoolwide changes in curriculum and scheduling, but they begin with projects restricted to the ninth grade and a small voluntary group of faculty. A recent review of data on the California School Improvement Program (Marsh, 1985) explained how teachers and administrators found many ways of creating new programs or improving existing ones without taking on the risks of broad scale schoolwide reform. In spite of the harsh critiques of secondary schools, other research shows both that fundamental structural changes are unlikely and that marginal, program specific changes can be effective. We need to understand more about how marginal changes can be successfully implemented.

Another conclusion of much research, however, points to the necessity of change that does approach serious structural dimensions: the need for greater autonomy and empowerment at the school site (Klausmeier, in press; Purkey & Smith, 1985; Turnbull, Smith, & Ginsburg, 1981). In spite of the attractiveness of this conclusion, it is also clear that schools must be accountable to external units and agencies (especially to school districts and states) and that the external units themselves may help individual schools to improve. This presents an important problem: how can schools develop the degree of autonomy necessary to make meaningful changes in the directions suggested above, but at the same time maintain connections with external units necessary both for social accountability and for receipt of needed resources? Therefore, in addition to the study of change at the margins within schools, the Center will try to learn how a constructive balance between school autonomy and accountability can be developed.

A number of important themes cut across the five areas of study which we have summarized.

Special populations such as minorities and students from low-income families must struggle continuously to succeed in many high schools. The Center will examine the ways in which high schools create differential opportunities for these groups. Work will focus on those practices, policies, and allocations of resources that offer hope for boosting their engagement and achievement.

Adolescents are viewed as coproducers of their knowledge, affected profoundly by experiences in and out of schools. Instructional effectiveness is seen largely as the challenge of mobilizing student effort among students who vary considerably in their responsiveness to different content and teaching styles. How this can be done effectively will be studied throughout the Center.

Administrators and teachers at the school site need help in managing their schools to enhance student engagement and achievement in ways responsive to their unique circumstances. All research areas will attempt to identify particular actions or strategies, especially the allocation of resources, which facilitate effective management. Investigators of school change will develop a synthesis and new theory on school-site levers, or working at the margins to improve an organization, and this theory can be viewed as a new attempt to conceptualize leadership itself. Special attention will be given to

strategies for building goal consensus within a school around the major concerns we have noted: academic achievement, commitment to at-risk students, higher order thinking in the curriculum, and the engagement of students and staff.

Deciding upon the proper content for high school curriculum is a persistent issue. In our view it would be inappropriate for the national center on secondary schools to attempt to prescribe content in specific curriculum areas. It is important, however, to study the ways in which various types of content contribute to student achievement and engagement, and this topic would be addressed through research on academic achievement, at-risk students, and higher order thinking.

Researchers and policymakers alike have focused recently on differences between public and private secondary schools (e.g., Alexander & Pallas, 1983; Cain & Goldberger, 1983; Coleman et al., 1982; Morgan, 1983). The Center will look to private schools for ideas, especially in regard to creating a climate that fosters students' engagement. Private schools will be represented in the Center's advisory network and in its research studies. Additionally, the Clearinghouse syntheses will summarize the relevance of emerging data on private schools for public school reform strategies.

Collaborative Relationships

Collaboration with other Centers and Labs will be important in the planning of future work, in its execution, and in dissemination. We foresee several specific activities related to the goals of knowledge development, improving practice, and providing national leadership. The Center will consult with other agencies on tasks such as developing bibliographies for literature syntheses, identifying exemplary schools, identifying networks of practitioners and researchers for dissemination activities, and most importantly the planning of future research. In addition to consultation through individual and small group meetings and commissioning of short papers, the Center will sponsor joint conferences and publications and initiate collaborative research and development projects.

Practitioner Involvement

The gulf between educational researchers and practitioners is well known, and the barriers to crossing it are substantial (Barlow, Hayen, & Nelson, 1984; Cazden, 1983; Glaser, Abelson, & Garrison, 1983). But powerful understandings about how secondary schools work (and could work) cannot be created without extensive interaction between the schools and the research community. The point is not to investigate only those questions that practitioners pose or to plead for practitioners constantly to modify practice according to researchers' findings. Instead, insights emerging in one arena must be continually tested in the other. Without an iterative process, neither the knowledge of researchers nor that of practitioners is likely to produce adequate explanations of schools and their improvement. Practitioners will be involved in the conception, execution, and evaluation of

research and, of course, in development activities aimed at school improvement. This involvement will be encouraged through the Center's advisory networks and through collaborative projects with professional organizations (for example, NASSP, ASCD, AFT) and with other groups focused on high school improvement (for example, the Coalition for Essential Schools, the Academy for Educational Development, and the Harvard Principals' Network).

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